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“ Voici comment il faut dresser la table pour les résultats de chaque mois, année commune. (Voyez tableau No. 4.)

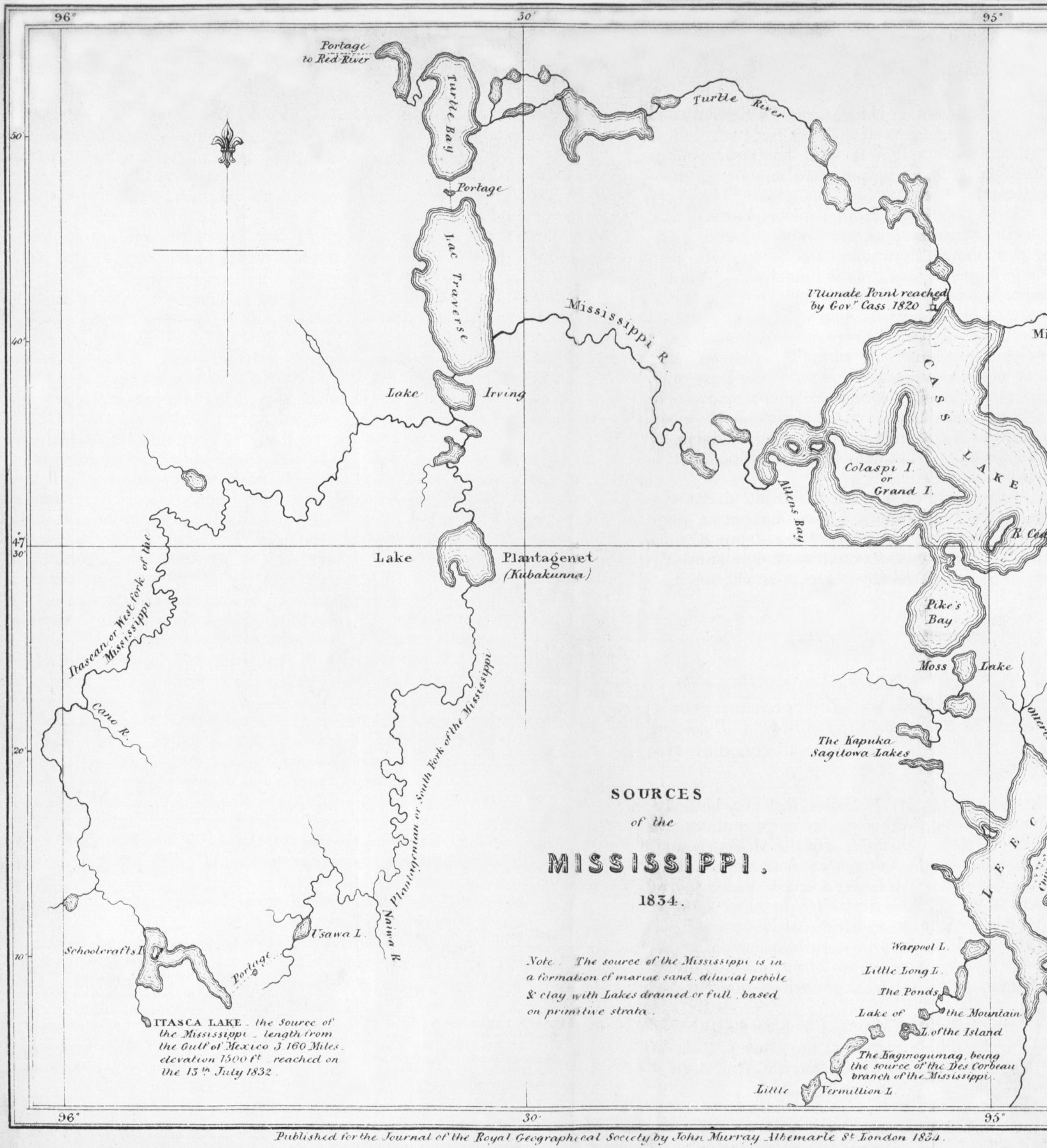
“ On mettra en tête du tableau le nom du mois : soit pour janvier, comme dans l’exemple. Dans la première colonne on mettra les années, dans la seconde les degrés de plus grande chaleur, dans la troisième les degrés du plus grand froid, dans la quatrième la chaleur moyenne, dans la cinquième la plus grande élévation du baromètre, dans la sixième la moindre élévation, dans la septième l’élévation moyenne, dans la huitième la plus grande humidité, dans la neuvième la moindre humidité, dans la dixième l’humidité moyenne, dans la onzième la quantité de pluie, dans la douzième la quantité d’évaporation, dans les huit colonnes suivantes le nombre de fois ou de jours, si l’on veut, que le vent a soufflé des rumbs indiqués en haut de ces colonnes ; dans la vingt-et-unième le nombre de jours qu’il a fait beau, dans la vingt-deuxième le nombre de jours mauvais, dans les vingt-troisième, vingt-quatrième et vingt-cinquième le nombre de jours qu’il a plu, neigé ou tonné ; dans la vingt-sixième l’énumération des phénomènes célestes, et dans la vingt-septième et dernière les remarques générales.

“ Cette table étant remplie, plus ou moins, on tirera une ligne horizontale en bas. On additionnera les colonnes et on prendra les termes moyens en divisant ces sommes par le nombre d’années ; ce qui donnera les résultats moyens et extrêmes pour le mois de janvier, année commune. On fera la même chose pour chacun des autres mois.”

IV.—*Narrative of an Expedition through the Upper Mississippi to Itasca Lake, the actual Source of this River ; embracing an Exploratory Trip through the St. Cròix and Burntwood (or Broule) Rivers ; in* 1832. Under the direction of Henry R. Schoolcraft. New York. 1834. 8vo.

“ AMERICAN geography,” says Mr. Schoolcraft, “ may be said to have had three important problems to solve, in modern times : the first and second of these related to the source of the Missouri, and to the course and termination of the Columbia ; both were substantially resolved by the expedition of Lewis and Clark, under the administration of Mr. Jefferson. It is to be borne in mind, however, that but one of the three forks, up to which the Missouri was traced, has been explored ; that its two north-western branches have not been ascended ; and that, consequently, we do not actually know which of its primary tributaries is the longest, or brings down the greatest volume of water.

“ The true source of the Mississippi, which forms the third topic of inquiry, was brought into discussion at the same period ; and immediately after the acquisition of Louisiana, the American govern-



SOURCES
of the
MISSISSIPPI.
1834.

ITASCA LAKE – the Source of the Mississippi – length from the Gulf of Mexico 3.160 Miles. elevation 1500 ft. reached on the 13th July 1832.

Note. The source of the Mississippi is in a formation of marine sand, diluvial pebble & clay with Lakes drained or full, based on primitive strata.

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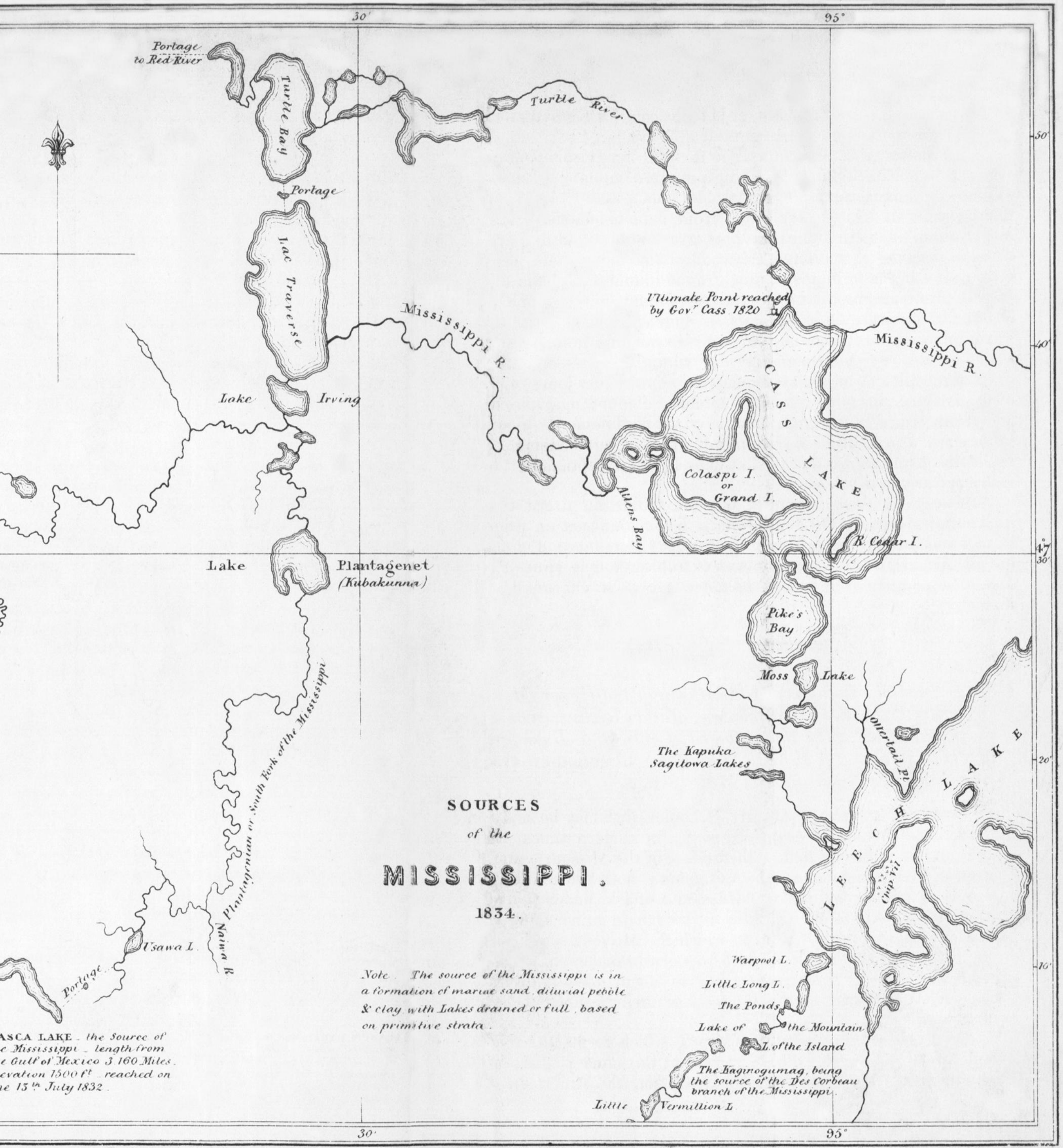
30'
95°
Portage to Red River
Turtle Bay
Turtle River
Portage
Lac Traverse
Mississippi R.
Lake Irving
Ultimate Point reached by Govr. Cass 1820
Mississippi R.
CASS LAKE
Colaspi I. or Grand I.
Allens Bay
R. Cedar I.
Lake Plantagenet (Kubakunna)
Pike's Bay
Moss Lake
Plantagenian or South Fork of the Mississippi
Ottertail Pt.
The Kapuka Sagitowa Lakes
LEECH LAKE
Chip. Vil.
SOURCES of the MISSISSIPPI. 1834.
Usawa L.
Naiwa R.
Portage
Note. The source of the Mississippi is in a formation of marine sand, diluvial pebble & clay with Lakes drained or full, based on primitive strata.
Warpool L.
Little Long L.
The Ponds
Lake of the Mountain
L. of the Island
The Kagirogumag, being the source of the Des Corbeau branch of the Mississippi.
Little Vermillion L.
ASCA LAKE _ the Source of
e Mississippi _ length from
e Gulf of Mexico 3 160 Miles.
evation 1500 ft _ reached on
he 13th July 1832.
50'
40'
47°
30'
20'
10'
30'
95°

Published for the Journal of the Royal Geographical Society by John Murray Albemarle St London 1834. C. Bradbury.

ment sent an officer, with a suitable body of men, to determine it. Lieutenant Pike, who was selected for this service, did not, however, set out early enough in the season (1805) to accomplish the object. After the selection and purchase of the site, on which the fort near the Falls of St. Anthony is now situated, he encountered delays in ascending the rapids characteristic of that part of the Mississippi. Winter overtook him before reaching the junction of the De Corbeau. He prepared for its severities by erecting a block-house, for the security of his provisions and men. He then proceeded with a small detachment on snow-shoes to Sandy Lake and Leech Lake, two points of central influence, which were then occupied by the North-West Fur Company.

"No further effort was made to explore the sources of the Mississippi for several years. In 1820, Governor Cass, then administering the government of Michigan Territory, and exercising jurisdiction over Indian affairs, obtained the sanction of the general government to visit the region. He left Detroit with a party of thirty-eight men, including the gentlemen composing his suite, during the latter part of May. He was supplied for a journey of four months. After traversing the coasts of Lake Huron, and visiting Michilimackinac, he proceeded north-westward, by ascending the primitive summit at the Falls of St. Mary, went through the extended and picturesque basin of Lake Superior, and first struck the waters of the Upper Mississippi at Sandy Lake. To this point he was accompanied by the military escort, and by the train of larger canoes employed to transport stores and baggage. But the fatigues which the men had undergone in crossing portages, added to the low state of the water, induced him to form a permanent encampment at this place; and he proceeded with a select party, in canoes, to explore the Mississippi.

"It was the middle of July when the expedition reached Sandy Lake, and the difficulty of subsisting so large a party in so remote a position, with the constant claims of suffering and hungry tribes, who presented themselves at every point, began to be severely felt. The exploring party, which was now organized, went out under a sense of these circumstances, and with a feeling of the responsibility pressing upon the claims of the expedition in other quarters, which limited the time applicable to the ascent. They entered the Mississippi on the 17th of the month, and found a strong current, with alluvial banks, and a vegetation indicative of a fertile soil. For the distance of about one hundred and fifty miles, above this point, the party found no diminution in the average strength of the current, which was frequently accelerated by rapids. The latter then assumed a more formidable aspect for ten or a dozen miles, at the end of which they were terminated by the falls of Peckágama. At this cataract, the river, which below has its course through alluvial banks, densely wooded, is compressed between rocks of granulated quartz, over which it rushes with a velocity which would seem to threaten destruction to any species of craft that should attempt the descent. It became necessary, at this point, to transport the canoes and baggage from two to three hundred yards over land.

" On reaching the Peckágama summit, the channel of the Mississippi was found to flow more directly from the west, with a comparatively sluggish current. But the most distinctive trait of this part of the river was found to consist of a series of extensive savannahs, through which the river displays itself in the most elaborate windings. The junction of the Leech Lake branch takes place at this plateau, at the computed distance of fifty-five miles above the falls. After passing this point, the course of the river is again, generally, from the north-west, about forty-five miles to Lake Winnipec, a handsome body of clear water, estimated to be ten miles broad. The course of the ascent is then west, for about fifty miles, at which distance the river is found expanded into a more considerable lake, presenting an area of limpid water of, perhaps, 120 square miles. This sheet, which has subsequently been found to be the largest expansion of the Mississippi, is since denominated Cass Lake. It was the highest point reached. The party entered it on the 21st of July. The question of pursuing the stream farther, was then submitted by Governor Cass to the gentlemen composing his party. Anxious as all were to see the actual source of so celebrated a stream, their wishes were controlled by circumstances. Inconveniences had been felt from leaving the supplies at so considerable a distance below; and as the waters were found to be low, and the preparations inadequate for a journey of indefinite extent, a decisive opinion was expressed in favour of a return from this point. This decision was immediately carried into effect.

" From the best information that could be obtained, the Mississippi was represented to have its origin in a lake called *La Biche*, supposed to be sixty miles distant in a north-west direction. Upon this estimate, the length of the river was computed to be 3038 miles, and by a series of approximate estimates, its altitude placed at 1330 feet above the Atlantic. Numerous rapids and lakes were, however, stated to exist in this remote part of the stream, and a degree of vagueness and uncertainty exhibited in relation to it, which evinced, that the traders, who were relied on for information, either had seldom frequented it, or preserved an indefinite recollection of its geographical features."

Such was the state of public information on this point in 1820. In 1830, Mr. Schoolcraft first received instructions to renew the attempt, to which a desire to restore peace between the Chippewas and Sioux further stimulated the American government. In 1831, he reached the upper course of the Mississippi from Lake Superior for the purpose; but the waters were so low, that it was found impossible to ascend the river. In 1832, the expedition was more fortunate; and succeeded in fully exploring the sources of this great stream. It may be sufficient to take up its proceedings from Cass Lake, the farthest point previously attained :—

"Every arrangement being completed on the evening of the 10th, we embarked at three o'clock the next morning. Our course lay westward, through a strait, formed by the approach of a part of the island to a part of the main shore. We then passed two islands, called Garden and Elm islands. The morning was too hazy to give us any extensive prospect of the lake, or its shores. We had been a little more than an hour in motion, when we found ourselves nearing the western head of the lake, and the men soon shoved our canoes upon a sandy beach, with the exclamation of *un portage*. We found this portage to extend about fifty yards, over a plain of sand, bearing pine, and terminating on the banks of a small lake. Through this lake the Mississippi has its course, and the two lakes are connected by a circuitous channel, which might, perhaps, have occupied half, or three-quarters of an hour to ascend. The lake, for which we heard no name, is several miles in extent. We passed it transversely, and entered the channel of the river on its western border. It presents a still current, with an edging of savannah, which, at no great distance above, is again expanded around the margin of another lake, called Tascodiac. Hills of sand, covered with yellow pines, here present themselves, and the river exhibits for several miles above, either a sand bank, or a savannah border. Time is the only measure of distance which we had the means of referring to. About eight o'clock, rapid water was encountered, and at this point, which may be fifteen miles above Cass Lake, the meadow lands cease. Boulders, of a primitive character, are found on the rapids. The rapids are such, in their force and inequality of depth, as to require the men frequently to wade, and pull up the canoes. There are, say, ten of these principal rapids, in the ensuing twenty or twenty-five miles, at which distance we reach the most northern point of the Mississippi, which is marked by the fine expanse of the Pamitchi Gumaug, or Lac Travers. This lake may be fifty feet above the level of Cass Lake. It is about twelve miles long, from north to south, and six or seven broad, with elevated shores, presenting to the eye a beautiful vista of hard wood groves.

"We were an hour in crossing the lake south-westwardly, and were impressed with the extent and beauty of the prospect. On gaining the opposite shore, we found the Mississippi flowing with a brisk and deep current into it, and exhibiting a width of perhaps one hundred and fifty feet. In landing a few moments at this point, we found the beach strewed with small shells, both uniones and helices. A log-house, used as a winter trading camp, stood a few hundred yards northwardly ; and this may be referred to as the most advanced trading location on the main waters of this river.

"Lac Travers is separated by a short channel, from a bay or lake of moderate dimensions, which is from its proximity considered a part of the main lake, although the current of the separating channel indicates the latter to be rather a *river* than a strait. It will be convenient to refer to it, as it is from this point that the Mississippi, which has now been pursued to its utmost northing, is ascended directly south. About four miles above this bay, the Mississippi has its ultimate forks, being formed of an east and west branch, of which the west branch is decidedly the largest and considerably the longest. Reasons indicated by our guide, induced him to conduct us up the east branch, which we soon found expanded into a small lake, denoted Marquette, and not far above into another denoted La Salle. We were twenty-four minutes in passing through the last, and on leaving it found the stream strikingly diminished in volume, with a limited depth, and a vegetation of a more decidedly alpine character. About four miles higher the stream expands into a lake, six or seven miles in length, and about half that distance in width. This lake, which is called Kubbakunna, The Rest in the Path, presented a pleasing aspect after the sombre vegetation we had passed below. Rushes, however, were abundant toward its head, and we found the ground too low and wet for encamping. After ascending the river for a distance, we put ashore for the night at a point of woods extending into the marsh-land constituting the river margin. The soil at this place appeared to be of the most frigid character. A carpet of moss covered it, which the foot sank deep into at every step. The growth was exclusively small grey pine, with numerous dead branches below, and strikingly festooned with flowing moss. Nearer the margin of the river, alder, tamarack, and willow, occupied the soil. As night approached it commenced raining, which served to add to the natural gloom of the spot.

"We resumed the ascent at five o'clock in the morning, (12th.) The course of this branch of the river above the Kubbakunna Lake resembles a thread wound across a savannah valley. A species of coarse marsh-land grass covers the valley. Clumps of willow fringe this stream. Rushes and Indian reed are gathered in spots most favourable to their growth. The eye searches in vain for much novelty in the vegetation. Wherever the stream touches the solid land, grey pine and tamarack are conspicuous, and clumps of alder here take the place of willow. Moss attaches itself to almost every thing; and there is a degree of dampness and obscurity in the forest, which is almost peculiar to the region. Water fowl seem alone to exult in their seclusion, and evince the infrequency of intrusion by flying a short distance, and frequently alighting within gun-shot.

"At half-past five we came to an elevated sand-hill on the right shore covered with yellow pine, and presenting a naked face towards the river. As one of the canoes required mending, I directed the men to land at this spot for that purpose. Oza Windib, who was a little in the rear, at the moment said on coming up, that we were within a few hundred yards of the junction of the Naiwa, the principal tributary of this fork; that a series of rapids commenced at that point, which would render it necessary to make a portage the whole extent of them, and that it was better to commence the portage at this place, as the river so ran, that we might go directly back through the forest and strike its channel. He said that the Naiwa, which came in on the left, was a stream of considerable length, and originated in a lake which was infested by copper-head snakes, to which its name has reference. I observed that the soil at this place was of a diluvian character, and embraced pebbles, and small boulders of syenite, trap-rock, and quartz, and other debris of primitive and secondary rocks. One of the party picked up a well-characterized piece of zoned agate.

"While the mending of the canoes was in progress, the baggage was put in portable order, and as soon as all was ready, the men moved on with the canoes and effects, which were so arranged that all could be carried at one load, and it did not require them to go back. This was a point originally kept in view, in the curtailment of the baggage at the island, and it was an object of the highest importance to the speed and success of the trip. Each canoe and its apparatus, with some of the lighter pieces was carried by one man. The guide led off the men, with no slight burden on his own shoulders, first scrambling up the sandy acclivity, and then striking through a growth of scrub oak and pines. The showers of the morning had so thoroughly wet the grass and shrubbery, that a few moments walking through it was sufficient completely to saturate both pantaloons and stockings. I walked out a few hundred yards from the trail, towards the left, which brought me into the curve of the river in view of the rapids. There appeared to be a series of small rapids, with intervening shallows. The noise of falling water and the white wreaths of foam induced me to think there might be distinct falls, but I could discern nothing entitled to the name. The entire descent of the river at this series of rapids appeared to be, however, considerable, and might perhaps be estimated at forty-eight feet. I rejoined the party at the spot they had selected for their first pause, somewhat to their relief, probably, as guns had been fired by them, under the belief of my having missed the way. We first came in sight of the river again, on the brow of an elevated sand-hill precipitous towards the water. The guide halted to inquire whether it would not be preferable to encamp at this spot, as we should suffer less from insects than if we encamped in the valley of the river at the termination of the portage. As the daylight was not gone, and some distance still remained, I deemed it better to go on, that we might have nothing to do in the morning but to put our canoes in the water. On reaching the bank of the stream, we found its current placid, and our guide informed us that we had now surmounted the last rapids.

"A fog prevented our embarking until five o'clock in the morning, (13th,) and it was then impossible to discern objects at a distance. We found the channel above the Naiwa diminished to a good-sized brook, more decidedly marshy in the character of its shores; but not presenting in its plants or trees anything particularly to distinguish it from the contiguous lower parts of the stream. The water is still and pond-like. It presents some small areas of wild rice. It appears to be a favourite resort for the duck and teal, who frequently rose up before us, and were aroused again and again by our progress. An hour and a half diligently employed, brought us to the foot of Ussawa Lake: we halted a moment to survey it. It exhibits a broad border of aquatic plants, with somewhat blackish waters. Perch abound in it. It is the recipient of two brooks, and may be regarded as the source of this fork of the Mississippi; we were precisely twenty minutes in passing through it. We entered one of the brooks, the most southerly in position; it possessed no current, and was filled with broad-leaved plants, and a kind of yellow pond-lily. We appeared to be involved in a morass, where it seemed equally impracticable to make the land, or proceed far by water. In this we were not mistaken; Oza Windib soon pushed his canoe into the weeds and exclaimed, *Oma, mikunna*, (here is the portage.) A man who is called on for the first time to debark in such a place will look about him to discover some dry spot to put his feet upon; no such spot however existed here; we stepped into rather warm pond water, with a miry bottom. After wading a hundred yards or more, the soil became firm, and we soon began to ascend a slight elevation where the growth partakes more of the character of a forest. Traces of a path appeared here, and we suddenly entered an opening affording an eligible spot for landing. Here our baggage was prepared for the portage. The carbonaceous remains of former fires, the bones of birds, and scattered camp poles, proved it to be a spot which had previously been occupied by the Indians. The prevailing growth at this place is spruce, white cedar, tamarack, and grey pine. We here breakfasted.

"Having followed out this branch of the Mississippi to its source, it may be observed, that its existence as a separate river has hitherto been unknown in our geography. None of the maps indicate the ultimate separation of the Mississippi above Cass Lake into two forks. Little surprise should therefore be manifested that the latitude of the head of this stream is found to be incorrect. It was not however to be expected that the inaccuracy should be so great as to place the actual source an entire degree south of the supposed point. Such, however, is the conclusion established by present observations.

"The portage from the east to the west branch of the river is estimated to be six miles. Beginning in a marsh, it soon rises into a little elevation of white cedar wood, then plunges into the intricacies of a swamp matted with fallen trees obscured with moss. From this the path emerges upon dry ground; it soon ascends an elevation of oceanic sand, having boulders and bearing pines. There is then another descent, and another elevation; in short, the traveller now finds himself crossing a series of diluvial sand ridges, which form the height of land between the Mississippi Valley and Red River. This ridge is locally denominated Hauteur des Terres, where it is crossed in passing from Lac Plaie to Ottertail Lake, from which point it proceeds northward, separating the tributaries of the River des Corbeau from those of Red River. It finally subtends both branches of the Mississippi, putting out a spur between the east and west fork which intersects the portage, crosses the west or Itascan fork about the point of the Kakábikonce or Little Rock Falls, and joining the main ridge passes north-eastwardly of Lac Travers and Turtle Lake, and is again encountered in the noted portage path from Turtle Lake to Red Lake; it is, in fine, the table-land between the waters of Hudson's Bay and the Mexican Gulf. It also gives rise to the remotest tributaries of the river St. Louis, which through Lake Superior and its connecting chain may be considered as furnishing the head waters of the St. Lawrence. This table land is probably the highest in North-western America in this longitude.

"In crossing this highland, our Indian guide, Oza Windib, led the way, carrying one of the canoes as his portion of the burden; the others followed, some bearing canoes and others baggage; the whole party were arranged in Indian file, and marched rapidly a distance; then put down their burthens a few moments, and again pressed forward. Each of these stops is called a *posè* by the voyageurs, and is denominated Opugidjiwunon, or a place of putting down the burthen, by the Indians. Thirteen of these rests are deemed the length of the portage; the path is rather blind, and requires the precision of an Indian eye to detect it: even the guide was sometimes at a loss, and went forward to explore. We passed a small lake occupying a vale about midway of the portage in canoes; the route beyond it was more obstructed with underbrush; to avoid this, we waded through the margins of a couple of ponds, near which we observed old camp poles, indicating former journeys by the Indians.

"To the geologist the scene is one of interest; the boulders of granite and other primitive strata occurring on the surface, remind him of the original position of these masses in the system of nature, and indicate revolutions affecting the earth's surface, which have widely changed both the position and form of these solid materials. When the soil itself is examined, it adds further evidences of such changes. We may refer its sand to consolidated strata of this mineral which have been broken down by oceanic action, and distributed in the remarkable ridges and elevations which now characterize the face of the country. In whatever light the subject is viewed, it seems difficult to resist the conclusion, that water has been the cause under Providence in effecting these changes; and that the highest grounds in this region have been subjected to the peculiar influence which this element alone exerts in the work of attrition and deposition of strata, solid or diluvial. It might be interesting to inquire in what manner this agent of change was withdrawn, and whether a current was created toward any of the cardinal points. It would aid this inquiry to observe, in which direction the debris and soils were deposited in the heaviest masses? How far granite boulders had been carried from their beds? And whether wood, bones, and other organic remains had been subjected to like removals? We think these accumulations are abundantly witnessed in casting the eye down the Mississippi valley, with a measured decrease in the size and weight of the pulverized masses, in proceeding from the head to the mouth of this river. It is thus evident, that the heaviest boulders are found on its upper branches, while they become rare in its central plains, and disappear altogether, long before its entrance into the deltas at its mouth. And this remark may be coupled with the accounts given by travellers of the bleak, and denuded, and sterile character of the northern rock formations.

"But we have no leisure to devote to this investigation, and must proceed with the narrative that is before us. Every step we made in treading these sandy elevations seemed to increase the ardour with which we were carried forward. The desire of reaching the actual source of a stream so celebrated as the Mississippi—a stream which La Salle had reached the mouth of a century and a half (lacking a year) before, was perhaps predominant; and we followed our guide down the sides of the last elevation, with the expectation of momentarily reaching the goal of our journey. What had been long sought, at last appeared suddenly. On turning out of a thicket into a small weedy opening, the cheering sight of a transparent body of water burst upon our view. It was Itasca Lake—the source of the Mississippi.

"Itasca Lake, the *Lac la Biche* of the French, is, in every respect, a beautiful sheet of water, seven or eight miles in extent, lying among hills of diluvial formation, surmounted with pines, which fringe the distant horizon, and form an agreeable contrast with the greener foliage of its immediate shores. Its greatest length is from south-east to north-west, with a southern prolongation, or bay, which receives a brook. The waters are transparent and bright, and reflect a foliage produced by the elm, lynn, maple, and cherry, together with other species more abundant in northern latitudes. The lake itself is of irregular form, which will be best illustrated by the accompanying sketch. It has a single island, upon which we landed, after an hour's paddling from the spot of our arrival and embarkation. We found here the forest trees above-named growing promiscuously with the betula and spruce. The bones of fish and of tortoise, found at the locality of former Indian camp-fires, indicate the existence of these species in the lake. We observed a deer standing in the margin of the lake: and here, as well as throughout the lakes of the region, found the duck, teal, and loon in possession of their favourite seclusions. Innumerable shells (a species of small helix) were driven up on the head of the island. Other parts of the lake yield small species of the unio, which were found strewing the bed of the outlet; and it may here be remarked, that this shell exists, in the largest and heaviest species heretofore known, in the lower parts of this stream—the Mississippi having its origin here.

"The outlet of Itasca Lake is perhaps ten or twelve feet broad, with an apparent depth of twelve to eighteen inches. The discharge of water appears to be copious, compared to its inlet; springs may, however, produce accessions which are not visible, and this is probable both from the geological character of the country and the transparency and coolness of the water.

" The height of this lake above the sea is an object of geographical interest, which, in the absence of actual survey, it may subserve the purposes of useful inquiry to estimate. From notes, taken on the ascent, it cannot be short of 160 feet above Cass Lake. Adding the estimate of 1330 feet, submitted in 1820, as the elevation of that lake, the Mississippi may be considered to originate at an altitude of 1490, say 1500, feet above the Atlantic. Its length, assuming former data as the basis, and computing it, through the Itascan or west fork, may be placed at 3160 miles; 182 of which comprises an estimate of its length above Cass Lake. Its general course, in *ascending*, above the latter point is north of west as far as Lac Travers; then south to its primary forks, which is continued, following up the east fork to Kubbakunna Lake, and for some distance farther. It then varies a short distance north and north-west, then south-west and south, and finally south-west, to its main source in Ussawa Lake. The portage thence to Itasca Lake is west-south-west. Both these lakes appear to rise in springs on the height of land. They are separated by about six miles of country. Their latitude we had no means of accurately determining: from daily notes of the courses and distances, kept by Lieutenant J. Allen, as indicated by a compass and watch, their position is, however, shown to be *south-west*, and not, as heretofore supposed, *north-west*, of Cass Lake: they are, in fact, a little south of west from Leech Lake, which is placed on our best maps in 47° 16′. The highest northing attained by the Mississippi is on the great diluvial plateau, containing the contiguous waters of Lakes La Salle, Marquette, and Travers, which cannot vary more than a few minutes from forty-eight degrees. These facts will explain the error of the elder geographical writers, who supposed that the parallel of forty-nine degrees would intersect the Mississippi. Its origin in the remote and unfrequented area of country between Leech Lake and Red River, probably an entire degree of latitude south of Turtle Lake, which still figures on some of our maps as its *source*, throws both the forks of this stream out of the usual route of the fur trade, and furnishes perhaps the best reason why its actual sources have remained so long enveloped in obscurity.

" The Mississippi River traverses more degrees of latitude than any other river in America, and the remark might perhaps be extended to the habitable globe. The extremes of its changes in climate and vegetable productions are consequently very great. It occupies above a thousand miles of the distance between the arctic circle and the equator. Long as it is, however, it has a tributary longer than itself (the Missouri). Like the Niger, its mouth was discovered by expeditions down its current; but, unlike that stream, which has so long held the geographical world in suspense, its sources have been also sought from its central parts. Its entire course is at length known; and we may now appeal with full certainty to the Balize and to Itasca Lake as its extreme points: at the latter, it is a placid basin of transparent spring water; at the former, it is as turbid as earth in suspension can make it, and carries a forest of floating trees on its bosom. Below the junction of its primary forks it expands, at very unequal distances, into eight sheets of clear water, each of which has features worthy of admiration: four of these, Lac Travers, Cass Lake, Winnepec, and Lake Pepin, are lakes of handsome magnitude and striking scenery. The number of its tributaries, of the first, and the second, and the third class, is so large, that it would furnish a labour of some research to determine it. The Missouri, the Ohio, and the Arkansas, are of the noblest class. Whoever has stood at the junction of these streams, as the writer has done, must have been impressed with an idea of magnitude and power which words are incapable of conveying. The broadest parts of its channel lie in the central portions of its valley; its depth is great in all its lower parts, and increases as it flows on to the Gulf, and its general descent and velocity are such as to appear very striking characteristics. Noble views arrest the eye of the observer in every part of its diversified course. Originating in a heavy and extensive bed of diluvial soil, superimposed upon primitive strata, it soon wears its channel down to the latter; and, after running over them for several hundred miles, plunges at length, at the Falls of St. Anthony, over the carboniferous limestone formation which is so prevalent and so valuable for its mineral deposites below that point. This is finally succeeded by diluvial and alluvial banks, the latter of which are semi-annually enriched by fresh deposites, and exhibit a delta as broad and as exuberant as the Nile. Like the latter, it has its cataracts in the Falls of St. Anthony and Pukaigama, and in numerous lesser leaps and cascades, where its current is tossed into foam, and threatens destruction to the navigation. Such are its physical traits, and these enough in their character, magnitude, and variety, to lead our contemplations irresistibly 'through nature up to nature's God.'

"Having gratified our curiosity in Itasca Lake, we prepared to leave the island, but did not feel inclined to quit the scene without leaving some memorial, however frail, of our visit. The men were directed to fell a few trees at the head of the island, thereby creating an area for the purpose of erecting a flag-staff. This was braced by forked stakes, and a small flag hoisted to its place. Taking specimens of the forest growth of the island, of a size suitable for walking-canes, and adding its few species to our collections of plants and conchology, we embarked on our descent. The flag which we had erected continued to be in sight for a time, and was finally shut out from our view by a curve of the lake. We found this curve drawn out in such a manner as to form, with the opposite shore, the channel of the outlet. We soon felt our motion accelerated by a current, and began to glide with velocity down a clear stream, with a sandy and pebbly bottom, strewed with shells, and overhung by foliage. Ten feet would, in most places, reach from bank to bank, and the depth would probably average over a foot; the water was not, however, equally distributed. A strong and winding channel made it a labour of active watchfulness for the canoe men, to keep our frail vessels from being dashed against boulders, or torn in pieces by fallen timber or overhanging trees. Chopping with the axe was frequently necessary to clear the passage, and no small labour was imposed by getting through the drift wood, piled up at almost every sudden bend. We were almost imperceptibly drawn into a series of rapids and petty falls, where the stream was more compressed and the water deepened; but the danger rendered tenfold greater by boulders of blackened rocks and furious jets of the stream. We were rather hurled than padled through these rapid passes, which increased in frequency and in fury as we advanced. After being driven down about twelve miles of this species of navigation, during which the turns are very abrupt, the river displayed itself, so to say, in a savannah valley, where the channel is wider and deeper, but equally or more circuitous, and bordered with sedge and aquatic plants. This forms the first plateau; it extends eight or nine miles. The river then narrows and enters another defile, beset with an almost continued series of rapids.

"At a place called Kabábikons, or the Little Rock Falls, we made a short portage; two of the canoes, however, made the descent, but not without imminent peril, and a delay eventually greater than if they had been carried across the portage. We descended this second series of rapids, a distance of about nine miles, and encamped at a late hour on a high fine bank; having come, altogether, about thirty-two miles below Itasca Lake. Wearied with the continued exertion, the frequent wettings, and the constant anxiety, sleep soon overtook the whole party.

"We were in motion again a little before five o'clock in the morning (14th). The rapids continued. The branches of large trees often hung so near to the water, that if we were not in peril of being entangled, like the Jewish rebel king, we were in a more continual danger of having every moveable article swept from the canoes. An accident thus occurred to one of the canoes, about six o'clock in the morning, which might have had a fatal termination.

"The character of the stream made this part of our route a most rapid one; willing or unwilling, we were hurried on. Yet I am not aware that any important object was neglected. Where there is much sameness in natural features, frequent landings are unnecessary; and whoever has devoted his time in going thus far up the Mississippi, will have made himself familiar with its plants, soil, and productions. The pine, in its varieties, is the prevailing tree; and whenever we get out of the narrow alluvions of the valley, arenaceous plains appear. Among the plants that border the river, the wild rose, which is so conspicuous on all the streams north-west of Lake Superior, is very often seen; the salix, so common to the lower Mississippi, and so uniformly infested with musquitoes, presents itself on the first plateau, and is afterwards one of the constant shrubs on the savannahs.

"The river continues to descend in steps. The second series of rapids was followed by a second level, or plateau, in which the channel assumes a width nearly or quite double to that which it presents on the rapids. On this level the Cano River comes in, as a tributary, on the right shore. The volume of water is perceptibly increased by it. This plateau may extend nine miles. It is succeeded by rapids of a milder character, below which the river again displays itself in savannahs, with a comparatively wide, winding channel. These are finally terminated by short and easy rapids which bring the river out of what we may designate as its alpine passes.

" At four o'clock, we came to the junction of the Piniddiwin, a tributary from the left, having its origin in a lake, and entering the Mississippi amidst an extensive marsh of rice, reeds, and rushes, which give it rather the appearance of a marsh than a lake. It is, however, called *Lac la Folle.* This spot was estimated to be 104 miles below Itasca Lake.

" About eighteen miles below the junction of the Piniddiwin we debarked, for the purpose of cooking supper, and preparing our canoes for a night descent, as the channel of the river was now sufficiently broad, deep, and equable to justify it. An *Ocant Ekinabic* was killed at this place. Lieutenant Allen, wishing daylight to finish tracing the river to its junction with the east fork, encamped here. By the time we were ready to embark, clouds had overcast the moon, which afforded a clear light before; but we trusted to our experienced guide, on a part of the river familiar to him, and we had no cause to repent of our confidence. Several shots were fired during the night at deer standing in the edge of the water. The men landed at one spot, and pursued an animal supposed to have been wounded. We found ourselves at the junction about half-past one o'clock in the morning (15th). Having given notices of our ascent of the river thus far, it is unnecessary to add to them."

To the above we may also add the following:—

" Cass Lake has been estimated to be within a few miles of 3000 from the Gulf of Mexico, and to lie at an elevation of 1330 feet above that point of the Atlantic waters; its distance north-west of Sandy Lake is about 270 miles, and of Fond du Lac 420 miles. Estimates make it 182 miles below the true source of the Mississippi in Itasca Lake, and 60 south of Red Lake. It receives Turtle River on its northern shore. This river is ascended through eleven small lakes, a distance of about 38 to 40 miles to its origin in Turtle Lake, once deemed to be the source of the Mississippi. There is a portage from the lake, for light packages of goods, across the summit-level of the Mississippi valley into Red Lake, and the fertile valley of Red River. The latter embraces the settlements planted by the Earl of Selkirk; the inhabitants of which maintained their existence for several years against the strenuous opposition of the North-West Company, and they appear now to be in a state of comparative prosperity, under the direction of a local governor, council, and clergy."

Mr. Schoolcraft's volume also contains the " Journal of an Exploratory Trip through the St. Croix and Bois-Brulé District," lying directly south of the head of Lake Superior; respecting the physical geography of which, and also of the present condition of its Indian inhabitants, he gives some interesting notices. Three Appendices conclude the work, one containing the contributions to "Natural History" made by the expedition; the next an essay on the "Chippewa Substantive;" and a third, his "Official Correspondence." The accuracy of some of his philological views regarding the Indian Languages, contained in the second of these, is disputed by a gentleman, Mr. Howse, of Cirencester, who is now preparing for publication, under the patronage, and at the joint expense, of the Royal Geographical and Church Missionary Societies, a Grammar and Vocabulary of the Cree Language. Some examples of the discrepancy between the two authorities we subjoin.

"Mr. Schoolcraft's remarks on the Indian language offer a few points on which a difference of opinion may be entertained; among others are the following:—

"1st. Mr. Schoolcraft says, page 95, 'Pronouns are inflected for tense, and in this shape supply the want of our auxiliary verbs.'

"The joining together of words not necessarily connected is, for many reasons, not desirable. It has, indeed, been the usage, in discussing these North American languages, to unite even the *nominative*, the *auxiliary particle*, and the accompanying *verb* together; but it is an inconvenient practice, as may be seen by the vocabulary of Cotton, the usefulness of which has been greatly lessened by thus unnecessarily increasing the difficulty of detecting the *verbal root*, and so far rendering it inaccessible to all but the practised Indian scholar. Mr. Jones, also, in his 'Translation of the Gospel of St. John' (published by the British and Foreign Bible Society, London, 1831), has, but most probably without the most remote thought of imitation, generally followed the same method; and this I at present consider to be the chief, if not the only drawback in his respectable work.

"Mr. Schoolcraft, however, seems inclined to unite only *two* of these; viz., the nominative and its accompanying auxiliary, considering the *latter* as an *inflection of the former*. *This*, however, is a point I cannot concede to him, for, with all due respect to his views, I am *decidedly* of opinion that the *auxiliaries*, *ke*, *kah*, *ka*, *tah*, &c. (Jones's orthography), far from being inflections, are *independent*, *uninflectible*, *interchangeable* particles; and that, in the following instances from the first chapter of Mr. Jones's Translation, above alluded to, the auxiliary particles (in italics) should stand detached from the word with which they there stand connected, in like manner with their English representatives *have*, *shall* or *will*, *can*, *may*, &c.; which stand also apart from *their* nominatives and verbs. In this point the idiom of the two languages is the same, except, as before stated, that the *Indian* auxiliary is *uninflected*.

" St. John i. 1,—*ké*ahyah (ké ahyah) oo*gé*-wéjéwegoon (oo gé wéjéwegoon) ; v. 2, *káh*wéjéwegood (kâh wéjéwegood ; v. 3, oo*gé*-kegézhetoonun (oo gé kegé, &c.) *tahgé*oózhechegahdásenoon (tah gé óozhe, &c.) *káh*oózhechegahdáig (káh oózhe, &c.) *ké*kekáinjegámahgáhsenoon (ké kekáin, &c.) ; v. 31, nin*gé*-kekánemahse (nin gé keká, &c.) *che*kekánemegood (che kekánemegood) ; not omitting Mr. Schoolcraft's own example (p. 178) o*gí* (o gí).

" In the event of a further translation being made of the Scriptures, it is desirable that this be particularly attended to; this appearing to be at present a very defective part in the *writing* of our translations, as well as a material obstacle to an improved orthography.

" 2d. Ranging under the same denomination words that appear to belong to different classes, seems to be objectionable.

" Under this description comes perhaps the word ' aindâd (home or place of dwelling),' exemplified, p. 184, as one of an ' extensive class of *nouns*.' It appears to myself to be evidently a *verb* in the third person singular of the subordinate or subjunctive mood. Indeed, all the inflections which the example presents (viz., aindâ—*yan*,—*yun*,—*d*,—*yâng*,—*yung*,—*yaig*,—*wâd*), and also the others of which this word is *susceptible* (in which number the *negative* form may be included), are *all* exclusively *verbal*. The modifications belonging to the *noun* are utterly inadmissible, which is not the case with those substantives which are of acknowledged *verbal* origin.

" That the word is used in the sense assigned to it is readily admitted ; i. e., as *definitive* of the *name*. Mr. Jones so uses it :—

St. John vii. 53...went unto his (their) *own house*	*áyindah̃wod* ké ezháhwug. *where they were abiding,* they went.
So also, „ xix. 27...unto *his own home*	emah *aindód*, there *where he was abiding*.

But its legitimate meaning is conveyed by a *verb* indicating the abiding (*temporarily* even, as well as lastingly), and is in this sense perhaps well exemplified in

St. John i. 38, Where *dwellest thou?*	áhn eende *aindáhyun?* what place *abidest thou at?*
„ i. 39, *Where he dwelt* . .	emah *aindód*, there *where he was abiding*.

Its *inanimate* form is *dahgoo* in the indic.; *dahgoog*, subjunct. : as,

Where *is it?* Ahn eend' *áindahgoog?* (with the *flattened* vowel).

The etymology of this word will be stated at large elsewhere in my Grammar.

" To the same (viz., 2d) observation may be referred another ' interesting class of substantives (see p. 201), derived from the third person singular of the present indicative of the verb by changing the vowel sound of the first syllable, and adding the letter *d* to that of the last.' This is, in fact, the third person of the *subjunctive*, with, as in certain *verbal* expressions is requisite, the first vowel (as Eliot terms it) *flattened*.

"What has been said above of the *modifications* of the class of words there alluded to as being *exclusively verbal*, is equally applicable to the class before us; and it may be added, that the specific terms adduced as examples (even if substantively used) can have reference to an object in the *third* person *only*, *that* being the *person*, as its derivation imports, which alone it represents. It will also be noted, as a consequence, that this term varies, in *verbal* forms, according to the *grammatical* person to which it refers.

"Thus assuming, for an example of this class of 'substantives,' this term *kắkenooắhmahgaid*, we find it in the *third* person, in

St. John xiii. 13. . .Ye call me *Master* and Lord { kákenooáhmahg*aid* kiya óogemah ked' ezhénekáhzhim.
{ '*he* who teaches,' and 'chief,' ye name me.

In the following five places we find the same term, 'Master or Teacher,' in the *second* person:—

i. 38
iv. 31
viii. 4
ix. 2
xi. 8 } . . . . *Master* . . . . kắkenooáhmahg*ayun*—i. e., '*thou* who teachest.'

xiii. 14,—Your Lord and (your) Master . . . . . { ked' oógemáhmewah kíya *kắ*kenooáhm*oonáig*.
{ i. e., your chief and *he* who teacheth *you*.—plu.

We find it also in the *indicative*, and *without* the altered vowel; viz.—

iii. 10,—Art *thou* a *Master* (teacher)? { *ke* kékenooáhmahg*á* nah?
{ i. e., teachest *thou*?

In reducing an oral language, especially an American language, to a grammar plan, I find it to be of the utmost importance to have strict regard to a correct classification of terms, as essential to a true intelligible system.

"3d. Mr. Schoolcraft says (p. 195), 'A Chippeway does not say *I love*, without indicating, by an inflection of the verb, the object beloved; and thus the expression is constantly, *I love him*, or *her*, &c. Neither does the infinitive appear to be generally the ultimate form of the verb.' This embraces two important points, which, with other observations of Mr. Schoolcraft's, deserving notice, will I trust be found thoroughly investigated, and satisfactorily settled, elsewhere in my grammar, &c."—*Letter from Mr. Howse.*

"P. S.—At p. 178, l. 22–9, Mr. Schoolcraft has also printed a paragraph which I should think misprinted, if he had not repeated the errors in it in two examples. He must have been at cross purposes with his interpreter when he took the phrases in question down."